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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,108	04/12/2006	Ian Faye	10191/3673	5595

26646 7590 04/01/2011

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EXAMINER	
MCGRAW, TREVOR EDWIN	
ART UNIT	PAPER NUMBER
3752	
MAIL DATE	DELIVERY MODE
04/01/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,108	FAYE ET AL.	
	Examiner	Art Unit	
	Trevor E. McGraw	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-29 and 31-39* is/are pending in the application.

4a) Of the above claim(s) *27 and 31-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-26,28,29 and 36-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 May 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/18/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Appeal Brief

In view of the board of patent appeal decision filed on 07/09/2010, PROSECUTION IS HEREBY REOPENED. A new ground(s) of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Director has approved of reopening prosecution by signing below:

/KAREN M. YOUNG/

Director, Technology Center 3700

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “metering conduit has a number of points of reduced wall thickness" is not shown in the drawings, “the spray discharge openings are arranged on the spherical portion of the nozzle body in such a manner, that two approximately semicircular line segments on an outer surface of the spherical portion together intersect center axes of all the spray discharge openings and intersect each other at a nozzle body axis, and the metering conduit is viewed from a nozzle body side end, the two approximately semicircular segments are approximately perpendicular to one another” is not shown in the drawings and must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Furthermore, the metering conduit (12) shown in Figure 1 does not have the reduced walls of thickness, since the other figures do not show this recited limitation of the metering conduit (12).

The spray discharge openings (6) do not shown in Figure 3 as being arranged on the nozzle body (7) in such a manner that two semicircular line segments on the outer surface of the spherical portion intersect the center axes of all the spray discharge openings (6), the Examiner cannot determine where these features are shown in Figures 1, 3 and 4 where the spray discharge openings (6) are shown.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as “Annotated Sheets” and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Examiner's Comment

Examiner is applying the metering conduit 22a, 23a of the Tsuji reference below as best understood in view of the drawing objections as indicated above as the Applicant does not show these features in the drawings.

Examiner is applying the arrangement shown in Figure 6 of the Tsuji reference with discharge openings 27 and 28 in relation to the center axis O; the Examiner has treated claim 39 as best understood in view of Applicant's lack of showing for the claimed subject matter recited in Claim 39.

For the purpose of this Office action, the claims will be examined as best understood by the examiner

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19-26, 28, 36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuji (US 3,913,845) as best understood.

In regard to Claims 19, Tsuji teaches a dosing device for a liquid fuel having at least one metering device (22, 23; metering occurs in passages 22 and 23 as only a predetermined amount of fluid can pass though the passages over a certain time period,

wherein the Tsuji fuel injection nozzle has a metering device that is located upstream from the nozzle 25) that is configured to meter fuel into a metering conduit (22/22a, 23/23a) and a nozzle body (25) that adjoins to the metering conduit (22/22a, 23/23a) has spray discharge openings (27, 28) that open into a metering chamber (see column 2, lines 59-63; combustion chamber is a chamber that receives a quantity of metered fuel for combustion purposes) where the nozzle body (25) projects with a spherical portion (see Figure 6 and column 2, lines 43-48) at a spray discharge end into the metering chamber (see column 2, lines 59-63), having spray discharge openings (27, 28) distributed over the spherical portion of the nozzle body (25; as shown in Figure 6 and column 2, lines 43-48), and wherein the metering conduit (22/22a, 23/23a) has a number of points of reduces wall thickness that decrease the thermal conductivity of the metering conduit (22/22a, 23/23a; the wall sections of the conduits have a number of points of reduced wall as shown in Figure 6, with the wall portions of member 21 and 24 varying in wall thickness).

In regard to Claims 20-23, Tsuji also teaches where the nozzle body (25) is shaped in a hollow-cylindrical fashion at an end facing the metering conduit (22a, 23a) and the nozzle body (25) is sealingly thread joined to the metering conduit (see column 2, lines 48-50) and the spray discharge openings (27, 28) have different diameters (see where 27 is bigger in diameter than 28 in Figure 7) and the center axes of the spray discharge openings (27, 28) have a common intersection point (see intersection points in Figure 6 at the hidden lines passing through 27 and 28).

In regard to Claims 24-26 and 28, Tsuji further teaches where the common intersection point is located on a center axis (O) of the nozzle body (25; see arrangement in Figure 6) where a location of the spray discharge openings (27, 28) is asymmetrical with respect to a center axis (O) of the nozzle body (25; see arrangement in Figure 6) and a tilt of the spray discharge opening (27, 28) is asymmetrical with respect to the center axis (O) of the nozzle body (25, see arrangement in Figure 6) and the at least one metering device is a fuel injection valve (see column 1, lines 4-13), the metering device of a fuel injector is located upstream of the discharge openings, which controlling the amount of fuel going from the reservoir to the discharge opening via the metering conduits, wherein the Tsuji fuel injection nozzle has a metering device that is located upstream from the nozzle 25, which controlling the predetermined amount of fuel to be discharged to the combustion chamber via discharge openings (27, 28).

In regard to Claims 36 and 39, Tsuji additionally teaches where the dosing device has an air inlet (air in 23 is supplied via an air inlet) with which gas is introduceable into the metering conduit (see column 2, lines 59-63) and the spray discharge openings (27, 28) are arranged on the spherical portion of the nozzle body (25) in such a manner, that two approximately semicircular line segments on an outer surface of the spherical portion together intersect center axes of all the spray discharge openings and intersect each other at a nozzle body axis (O), and the metering conduit (22a, 23a) is viewed from a nozzle body side end, the two approximately semicircular segments are approximately perpendicular to one another (see Figure 6 for arrangement of 27 and 28 in relation to the center axis O).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (US 3,913,845) in view of Nau et al (US 20060099088).

In regard to Claims 29 and 38, Tsuji as described above substantially teaches the present invention with the exception of where the fuel injection valve is a low pressure fuel injection valve configured to operate with fuel pressure of up to 10 bar and where the dosing device is adapted to input the liquid fuel into a chemical reformer to recover hydrogen.

On the other hand, Nau et al teach a fuel injection valve is a low pressure fuel injection valve configured to operate with fuel pressure of up to 10 bar (see paragraph 23) and where the dosing device is adapted to input the liquid fuel into a chemical reformer to recover hydrogen (see abstract and paragraphs 10, 13 and 21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the present invention was made to have provided the dosing device of Tsuji with the fuel injector that operates at 10 bars of pressure and also includes a chemical

reformer that recovers hydrogen in order to provide for a preferred operating pressure and to obtain hydrogen from hydrocarbon-containing fuels.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji (US 3,913,845) in view of Kappel et al. (US 6,311,950).

In regard to Claim 37, Tsuji as described above substantially teaches the present invention with the exception of welding the nozzle body through laser welding to the metering conduit.

However, Kappel et al teach laser welding as another form of securing and attaching separate pieces of material together in a rigidly fastened manner.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the present invention was made attach the nozzle body to the metering conduit of Tsuji with the laser welding techniques of Kappel et al in order to securely fasten two pieces of material together to prevent air gaps.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Housman (US 3,971,847) drawn to a hydrogen gas generator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor E. McGraw whose telephone number is (571)

272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571) 272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/T. E. M./
Examiner, Art Unit 3752

/Dinh Q Nguyen/
Primary Examiner, Art Unit 3752